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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/641,667	08/18/2000	John S. Fox	65446-0053	6732

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EXAMINER

CHEU, CHANGHWA J

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 09/27/2002

27

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/641,667

Applicant(s)

FOX, JOHN S.

Examiner

Jacob Cheu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 18 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-102 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) 1-102 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-17, drawn to a method of assaying molecules in a sample by determining the magnetic characteristics of the sample-probe complex, classified in class 436, subclass 526.

II. Claim 18-21, drawn to a method of isolating biomolecules in a sample, classified in class 436, subclass 177.

III. Claim 22-24, drawn to a method of identifying the presence of magnetically labeled biomolecules in a sample, classified in class 436, subclass 86.

IV. Claim 25-26, directed to a method of hybridization of single strand nucleic acid by contacting the nucleic acid with a ferrofluid, classified in class 435, subclass 91.1.

V. Claim 27-30, drawn to a method of hybridization of nucleic acid by contacting target molecules with two nucleic acid probes, classified in class 435, subclass 91.1.

VI. Claim 31-33, drawn to a method of nucleic acid hybridization by providing a probe-support complex, classified in class 435, subclass 6.

VII. Claim 34-35, drawn to a method of increasing binding efficiency, classified in class 435, subclass 7.1.

VIII. Claim 36-39, drawn to a method for identifying the presence of a protein by contacting target protein disposed on a support with a probe, classified in class 436, subclass 86.

IX. Claim 40-41, drawn to a method for identifying the presence of a protein by contacting protein-probe complex with a ferrofluid, classified in class 436, subclass 526.

X. Claim 42-43, drawn to a method for identifying the presence of a protein by contacting target molecule with a probe, classified in class 436, subclass 86.

XI. Claim 44, drawn to a method of identifying the presence of a protein by contacting the target protein with a probe-support complex, classified in class 436, subclass 526.

XII. Claim 45-47, drawn to a method of competitive binding analysis, classified in class 435, subclass 7.93.

XIII. Claim 48, drawn to a method of identifying an interaction of a probe with its target molecule, classified in class 436, subclass 526.

XIV. Claim 49-53, drawn to a method of enhancing the binding of a probe to a target molecule, classified in class 436, subclass 501.

XV. Claim 54-55, drawn to a method of reducing non-specific binding of a probe during a binding assay, classified in class 435, subclass 962.

XVI. Claim 56, drawn to a method of separation of nucleic acid, classified in class 435, subclass 173.9.

XVII. Claim 57-73, drawn to an apparatus for detecting a target molecule species, classified in class 422, subclass 236.

XVIII. Claim 74-89, drawn to a method of detecting the presence of a target molecule species, classified in class 436, subclass 526.

XIX. Claim 90-95, drawn to an apparatus for sensing a molecule having a magnetic member attached to the apparatus, classified in class 422, subclass 186.01.

XX. Claim 96-102, drawn to a method sensing a molecule having a magnetic membrane attached thereto, classified in class 436, subclass 526.

2. Inventions I-XVI, XVIII and XX are drawn to methods and each invention is deemed to be distinct for the following reasons:

In the instant case the different inventions, the step of *determining* one or more magnetic characteristics of a target probe complex in the claims of group I is not required by the claims of other groups. Likewise, the step of *isolating* the complex of claims of group II is not required by the claims of the other groups. The step of detecting a characteristic response of a magnetically labeled biomolecules in a sample in the claims of group III is not required by the claims of the other groups.

The step of contacting the nucleic acid hybrid with a ferrofluid whereby the ferrofluid binds to the single stranded target nucleic acid and the nucleic acid hybrid in the claims of group IV is not required by the claims of the other groups. Similarly, the step of contacting the sample with a first magnetically labeled probe and a second magnetically labeled probe to the target nucleic acid disposed on a support in the claims of group V is not required by the claims of the other groups. Likewise, the step of joining the nucleic acid probes to a support to form a probe-support complex and identify the presence of the target-probe-support complex by an accumulation of target-probe-support complex induced by the magnetic field in the claims of group VI is not required by the claims of the other groups.

The step of *increasing binding efficiency* by guiding the magnetically labeled probes with an applied magnetic field in the claims of group VII is not required by the claims of the other groups. The step of identifying the presence of a protein in the sample by a probe comprises a domain which binds to the target protein *and* a magnetic label in the claims of group VIII is not required by the claims of the other groups. The step of identifying the presence of a protein in the sample by contacting the target protein-probe complex with a ferrofluid whereby the ferrofluid binds to the target protein and the target protein-probe complex in the claims of group IX is not required by the claims of the other groups. The step of identifying the presence of a protein by determining magnetically a first probe-target complex and a second probe-target complex in the claims of group X is not required by the claims of the other groups. Likewise, the step of identifying the presence of a protein by providing a probe joined to a support so as to form a probe-support complex in the claims of group XI is not required by the claims of the other groups.

The step of competitive binding analysis by providing a second probe molecule comprising a domain which binds to the target biomolecule at the same site as the first probe in the claims of group XII is not required by the claims of the other groups. The step of identifying an interaction of a probe biomolecule with a target biomolecule with the magnetic swing of the target biomolecule-probe complex in an applied magnetic field in the claims of group XIII is not required by the claims of the other groups. The step of enhancing the binding of a probe biomolecule to a target biomolecule by applying a magnetic field to the target biomolecule and the probe such that the probe biomolecule is induced to move toward the disposed target

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biomolecule in the claims of group XIV is not required by the claims of the other groups. The step of reducing non-specific binding of a probe biomolecule during a binding assay by subjecting the target-probe complex to an applied magnetic field and administering an electrical field in the claims of group XV is not required by the claims of the other groups.

The step of separation of nucleic acid by administering a magnetic field to the sample such that one or more of nucleic acids are induced to separate according to the mass in the claims of group XVI is not required by the claims of the other groups.

The steps of detecting the presence of a target molecule species in a sample by providing a sensor having binding molecules which selectively bind to the target molecules, or bringing the sample and the magnetizable label particles into contact with the detector at the same or at different times, or removing unbound label particles, or determining the concentration of the target molecule in the claims of group XVIII is not required by the claims of the other groups. Likewise, the step of sensing a molecule having a magnetic member attached to the magnetic field by providing a molecular receptor attached to the magnetoresistive member so that when the molecule is bound with the molecular receptor, the magnetic field from the magnetic member influences a magnetization-dependent characteristic of the magnetoresistive member in accordance with a giant magnetoresistance effect in the claims of group XX is not required by the claims of the other groups.

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3. Inventions XVII and XIX are drawn to the apparatus inventions and each is deemed to be a separate and unrelated invention. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, invention XVII can be used to determine the concentration of the target molecule, whereas invention XIX does not claim this function. Therefore, both inventions XVII and XIX are drawn to unrelated inventions and having different modes of operation.

4. Inventions (I-XVI, XVIII and XX) and (XVII, XIX) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case both apparatus claimed by group XVII and XIX can be used to practice another materially different process such as a method for separating blood samples, or any one of the method above. Thus both categories of inventions are deemed distinct.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search for one group is not required for others, therefore restriction for examination purposes as indicated is proper.

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6. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

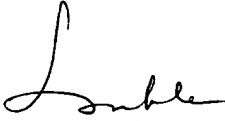
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Cheu whose telephone number is 703-306-4086. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 703-305-3399. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4556 for regular communications and 703-308-4556 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3399.

Jacob Cheu
Examiner
Art Unit 1641

September 17, 2002


LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600
09/20/02